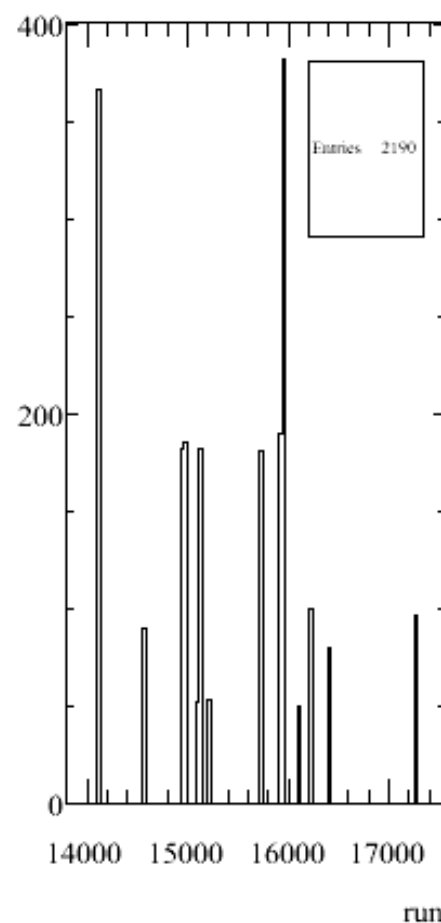


Scanning party summary

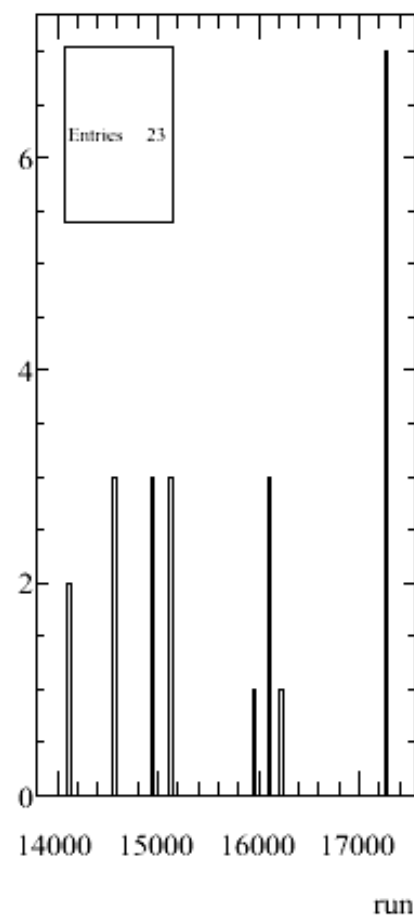
Mark Messier
Indiana University
5 April 2007

What was scanned

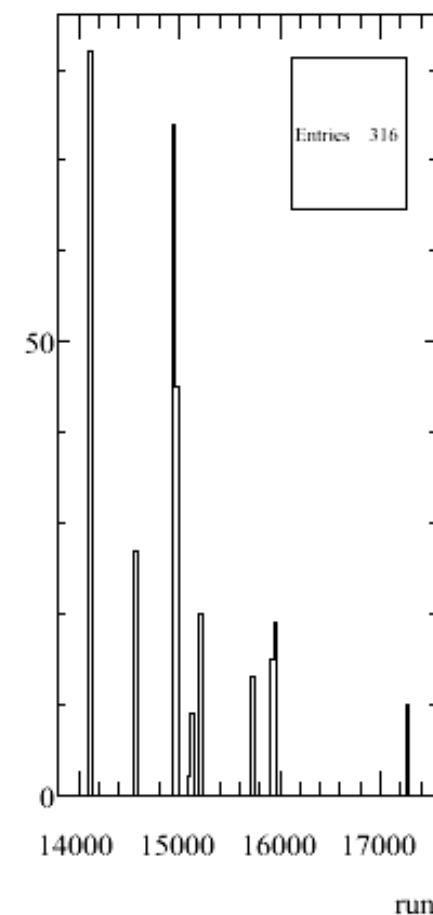
- Total of 2191 events scanned/reported
 - 23 reported “empty” (DAQ triggered)
 - 316 reported to be un-analyzable
- Rest of report focused on the 2580 good events



All Runs



Empty



Un-analyzable

Major failures

- Major failures include missing beam tracks, or events that are completely missing track or vertex reconstruction
 - Missing beam tracks: $27/2580 = 1.0\%$
 - Missing secondary tracks and vertex: $31/2580 = 1.2\%$

Tracking problems

- Missing tracks: $203/2580 = 7.9\%$
 - $18/2580=0.7\%$ missing high pT tracks
 - $152/2580=5.9\%$ "missing track"
 - $38/2580=1.5\%$ Failed to refit TPC track
 - $56/2580=2.2\%$ Extra "bogus" track
- Missing hits: $273/2580 = 10.6\%$
 - $158/2580= 6.1\%$ missing TPC hits
 - $115/2580= 4.5\%$ missing wire chamber hits

Vertex problems

- $208/2580 = 8.1\%$ events reported with vertex problems
 - $78/2580 = 3\%$ with blown vertex locations
 - $113/2580 = 4.4\%$ with tracks which were not associated to a vertex

My notes and summary - 1

- Overall, I think the rate of problems is larger than reported.
- Most events, if you look hard enough, have tracks with incomplete wire chamber information. Some may be inevitable until the Kalman is working
- In NuMI events, we often fail to form a vertex when it is close to the upstream edge of the target. May need to make selection windows a function of or account for extrapolation uncertainties
- Large number of events with missing tracks. Most are low momentum, I think. I expect incidence of “failure to refit” is larger than reported by scanners.
- Bogus tracks in $\sim 1\%$ of events seems low to me. Rate at which we fail to extrapolate tracks across dead regions of TPC seems higher to me than this.

My notes and summary - 2

- Thanks for taking the time to do the scan. I will continue to collect results
- Difficult to know exactly what this means
 - Large scanner-to-scanner variations
 - One bad track out of 10-30 tracks in an event can “spoil” the entire event
 - Roughly half the events scanned from NuMI target. Much more difficult to reconstruct than typical events
 - Other half from thin targets. Large fraction are just beam events. Much easier to reconstruct than typical events
- I don't see evidence for major problems that should hold up pass 4